ABSTRACT

The present invention is a guide wire imaging device for vascular or non-vascular imaging utilizing optic acoustical methods, which device has a profile of less than 1 mm in diameter. The ultrasound imaging device of the invention comprises a single mode optical fiber with at least one Bragg grating, and a piezoelectric or piezo-ceramic jacket, which device may achieve omnidirectional (360°) imaging. The imaging guide wire of the invention can function as a guide wire for vascular interventions, can enable real time imaging during balloon inflation, and stent deployment, thus will provide clinical information that is not available when catheter-based imaging systems are used. The device of the invention may enable shortened total procedure times, including the fluoroscopy time, will also reduce radiation exposure to the patient and to the operator.